Claims:

1. A process for the production of a precursor material for use in the preparation of a stabilized alumina catalyst support material, which process comprises the steps of:

(a) providing a mixture comprising aluminium and barium containing compounds; and

(b) heating the mixture under conditions to form particles of boehmite at least partially coated with a layer comprising barium and/or a compound of barium.

2. A process as claimed in claim 1, wherein the mixture comprising aluminium and barium containing compounds is a substantially homogenous mixture.

3. A process as claimed in claim 1 or claim 2, wherein the layer formed on the particles of boehmite comprises barium carbonate.

4. A process as claimed in any one of the preceding claims, wherein the aluminium containing compound comprises aluminium chloride, aluminium nitrate, aluminium sulphate, alumina and/or boehmite.

5. A process as claimed in any one of the preceding claims, wherein the barium containing compound comprises barium chloride, barium sulphate and/or barium nitrate.

6. A process as claimed in any one of the preceding claims, wherein the mixture comprising aluminium and

barium containing compounds is in the form of a substantially homogeneous precipitate.

7. A process as claimed in claim 6, wherein the substantially homogeneous precipitate is formed by a process involving homogeneous precipitation of aluminium and barium containing compounds from salt solution.

8. A process as claimed in claim 7, wherein the homogeneous precipitation involves generating a base within the salt solution through thermal decomposition of a water-soluble reagent.

9. A process as claimed in claim 8, wherein the water-soluble reagent comprises urea and/or hexamethylene tetramine.

10. A process as claimed in any one of claims 7 to 9, wherein the salt solution further includes a dispersant, such as polyvinylpyrrolidone.

11. A process as claimed in any one of claims 1 to 5, wherein the mixture in step (a) is formed by adding a solution comprising oxalic acid and a water soluble barium compound, preferably barium nitrate, to an aqueous slurry comprising boehmite.

12. A process as claimed in any one of the preceding claims, wherein heating of the mixture in step (b) is achieved by a hydrothermal process.

13. A process as claimed in claim 12, wherein the hydrothermal treatment is carried out at a temperatur in the range of from 90 to 300°C, more preferably from

100 to 220°C.

14. A process as claimed in claim 12 or claim 13, wherein the hydrothermal treatment is carried out at a pressure in the range of from 1 to 150 bar, preferably from 5 to 50 bar.

15. A process as claimed in any one of claim 12 to 14, wherein the hydrothermal treatment is carried out for a time in the range of from 30 minutes to 25 hours, preferably from 1 to 10 hours.

16. A process as claimed in any one of claims 1 to 11, wherein the mixture in step (b) is heated at a temperature in the range of from ambient temperature to boiling temperature, preferably by a reflux process.

17. A process for the preparation of a stabilized alumina catalyst support material, which process comprises the steps of:

(i) providing a precursor material comprising particles of boehmite at least partially coated with a layer comprising barium and/or a compound of barium; and

(ii) heating the coated particles of boehmite to a temperature at which at least some of the boehmite transforms to gamma-alumina.

18. A process as claimed in claim 17, comprising the step of further heating whereby at least some of the gamma-alumina transforms to theta and/or delta-alumina.

19. A process as claimed in claim 17 or claim 18, wherein said precursor material is produced according to a process as claimed in any one of claim 1 to 16.

20. A process for the preparation of an automotive catalytic converter, which process comprises the steps of dispersing a mixture comprising particles of boehmite at least partially coated with a layer comprising barium and/or a compound of barium on a metal or ceramic monolithic substrate, followed by heating the precursor mixture to a temperature at which at least some of the boehmite transforms to gamma-alumina.

21. A process as claimed in claim 20, comprising the step of further heating whereby at least some of the gamma-alumina transforms to theta and/or delta-alumina.

22. A process as claimed in claim 17 or claim 20, wherein heating is carried out at a temperature in the range of from 500 to 1000°C.

23. A process as claimed in claim 18 or claim 21, wherein the further heating is carried out at a temperature in the range of from 1000 to 1400°C.

24. A process for the preparation of a catalyst, such as an automotive catalytic converter, which process comprises the step of dispersing a stabilized alumina catalyst support material prepared according to the process of any one of claims 17 to 19 on a metal or ceramic monolithic substrate.

25. A precursor material for use in the preparation

of catalyst support material, which precursor material comprises particles of boehmite and/or transition alumina at least partially coated with a layer comprising barium and/or a compound of barium.

26. A precursor material as claimed in claim 25, wherein the layer formed on the particles of boehmite and/or transition alumina comprises barium carbonate, barium oxide and/or barium aluminate.

27. A precursor material as claimed in claim 25 or claim 26 provided in the form of a slurry or washcoat.

28. A stabilized alumina catalyst support material which comprises gamma, theta and/or delta-alumina, and which withstands substantial degradation to alpha-alumina after exposure to a temperature of approximately 1400°C for 1 hour.

29. A stabilized alumina catalyst support material as claimed in claim 28, wherein particles of gamma, theta and/or delta-alumina are at least partially coated with a layer comprising barium carbonate, barium oxide and/or barium aluminate.

30. A stabilized alumina catalyst carrier or support material as claimed in claim 28 or claim 29 having a specific surface area of at least 20 m^2/g after exposure to a temperature of 1400°C for 1 hour.

31. A stabilized alumina catalyst carrier or support material as claimed in any one of claims 28 to 30 having a specific surface area of at least 31 m^2/g after exposure to a temperature of 1400°C for 1 hour.